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REMARKS

In the Office Action, claims 78-84 and 92-95 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

In the Office Action, claims 67, 76, 85 and 87-91 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Number 6,278,894 to Salo et al.

In the Office Action, claims 67, 76, 85 and 87 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,154,171 to Chirife.

In the Office Action, claims 77 and 86 are rejected under 35 U.S.C. §103(a) as being unpatentable over Salo et al. or Chirife.

In the Office Action, claims 88-91 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chirife.

Following is a discussion of the patentability of the pending claims.

Independent Claim 67

Claim 67 recites a cardiac stimulation device to measure wall dynamics of a patient's heart. The device comprises a first pair of electrodes, a current source, a second pair of electrodes, a voltage measuring circuit, an impedance measuring circuit, and a stimulation circuit. The first pair of electrodes is configured for placement internally in the patient and in operable association with the patient's heart. The current source is operably associated with the first pair of electrodes and configured to produce a current therebetween. The second pair of electrodes is configured for placement internally in the patient and in operable association with the patient's heart. Each of the electrodes of the second pair is associated with either the patient's left atrium or the patient's left ventricle. The voltage measuring circuit is operably associated with the second pair of electrodes and is configured to measure a voltage therebetween responsive to the current produced by the current source. An impedance measuring circuit is configured for measuring myocardium impedance as a function of current produced by the current source and the voltage measured by the voltage measuring circuit. For an embodiment having the second pair of electrodes associated with the left ventricle, the voltage signal measured by

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the voltage measuring circuit will predominantly represent myocardium impedance for measuring left ventricular wall dynamics because the second pair of electrodes are positioned so as to be located on the left ventricular free wall (see specification, page 22, lines 7-11). The stimulation circuit is associated with the impedance measuring circuit and is configured to stimulate the patient's heart as a function of the measured myocardium impedance.

The Salo et al. reference discloses an apparatus for performing impedance plethysmograph. By appropriate selection of electrodes on a first and second leads to drive an AC carrier signal and other electrodes coupled to a sensing amplifier, an impedance versus time signal is derived. The signal is processed to provide useful information concerning cardiac performance in patients having CHF.

The Salo et al. reference does not disclose or suggest a stimulation circuit configured to stimulate the patient's heart as a function of the measured myocardium impedance. The Salo et al. reference is directed to a method and apparatus for obtaining diagnostic information by performing impedance plethysmography. Nowhere does the Salo et al. reference describe performing therapy such as stimulating the patient's heart as a function of the measured myocardium impedance.

The Chirife reference discloses a rate adaptive pace maker designed to accommodate changes in a patient's metabolic demand by utilizing ventricular ejection fraction (EF) as the rate controlling parameter. Ejection fraction is measured by sensing intracardiac impedance at end-diastole and end-systole, and then using these measurements to compute stroke volume.

The Chirife reference does not disclose or suggest measuring myocardium impedance between a pair of electrodes wherein each of the electrodes of the second pair are associated with either the patient's left atrium or the patient's left ventricle. As such, claim 67 recites impedance measurements performed within a single chamber to measure wall dynamics of the patient's heart. In accordance with the Chirife reference, an intracardiac impedance sensing lead is disposed in either the right or left heart (see column 3, lines 57-59). However, nowhere does the Chirife reference state that each of

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the electrodes from the second pair are associated with either the patient's left atrium or the patient's left ventricle.

Accordingly, it is respectfully submitted that claim 67 is in condition for allowance.

Dependent Claims 76 and 77

Claims 76 and 77 depend from claim 67 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 85

For at least the same reasons discussed above with regards to claim 67, it is respectfully submitted that claim 85 is in condition for allowance.

Dependent Claims 86-91

Claims 86-91 depend from claim 85 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are condition for allowance.

CONCLUSION

In light of the above remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

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